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Drought Update for the Week of July 12

Salt Lake City (July 15, 2021) – Extreme drought conditions persist statewide. With three months of Utah's irrigation season remaining, Utah reservoirs levels are lower than they were at the end of the 2020 irrigation season last October.

"We are no longer pulling water stored from this year's runoff. Instead, we're relying on water that has been stored in our reservoirs during previous years. We're pulling water from our emergency savings," said Utah Department of Natural Resources Executive Director Brian Steed. "No one knows how long this drought will last, so it's vital that we avoid using our stored water too quickly. Failing to save water now could lead to far more difficult circumstances later."

Droughts are considered a "creeping disaster" because the exact onset and end often can't be identified until long after the event has come and gone. Drought in the West is a combination of high temperatures and low winter snowpack. Drought in the East is caused by a lack of precipitation in the summer.

The following information from the week of July 12 is compiled by the Utah Divisions of Water Resources and Water Rights to provide context to Utah's current drought conditions, water storage, stream flows and water rights allocation.

At-a-glance changes for the week:

- Reservoir storage statewide continues to drop and now averages 58% (down from 59% last week). Twenty-six of Utah's largest 42 reservoirs remain below 55% of available capacity. No additional reservoirs dropped below that threshold in the past week.
- Current statewide reservoir levels are now lower than they were at the end of last year's irrigation season in October (58% now compared to 61% in October 2020). There are three months remaining in the irrigation season when water use is traditionally at its peak.
- Deer Creek, Jordanelle, Pineview, Rockport, Sand Hollow, Strawberry and Willard Bay are all highly visible reservoirs with storage levels currently below where they were at the end of 2020 irrigation season.

- Streamflows statewide continue to decline, with 77 of the 98 measured streams flowing below normal. This is an increase of 12 from last week. Daily flow from 28 headwater streams is currently flowing below the previous minimum daily flow record.
- The natural flow and percent of direct flow water rights on the portions of the river systems illustrated below continue to decrease. Most water rights across the state continue to experience earlier than normal curtailment.
- The elevation of the Great Salt Lake continues to hover between 2.5 to 3 inches from its historic low recorded in 1963. (The Division of Water Resources uses the daily averages rather than the instantaneous readings recorded every 15-minutes.)

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FULL REPORT: WEEK OF JULY 12

Precipitation and soil moisture

- To restore conditions to "average" for the year, Utah still needs about 15 inches of rain: 10 inches to cancel the deficit and 5 inches to account for the precipitation traditionally accumulated from July through September.
- To get streams running at healthy levels while filling reservoirs, Utah needs an above-average snowpack and frequent, but not extreme, warm-season storms to return soil moisture levels to normal.
- Air temperatures for the week were 5.5 degrees Fahrenheit above average.
- Overall (mountain and valley locations), the state has seen about half the precipitation typically received in a normal water year (Oct. 1 through Sept. 30).
- Soil moisture has remained steady during the last week, currently about 6% drier than average.

Streamflows

Streams statewide continue to flow at less than 50% of normal.

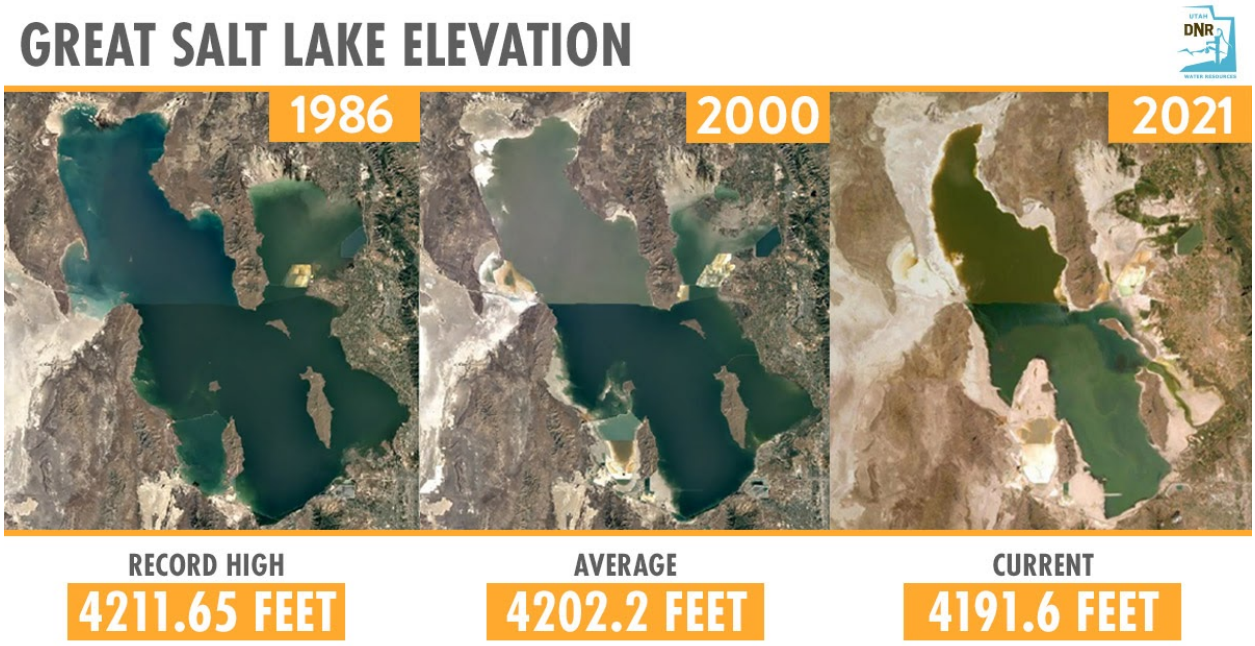
- Seventy-seven (65 reported last week) of Utah's 98 streams reporting data are flowing below normal. This is an increase of 12 from the previous week.
- Fifteen streams are flowing at their lowest levels ever recorded. This is an increase from six streams flowing at record low levels last week.
- Daily flow from 28 headwater streams is currently flowing below the previous minimum daily flow record.

Reservoir and Lake Levels

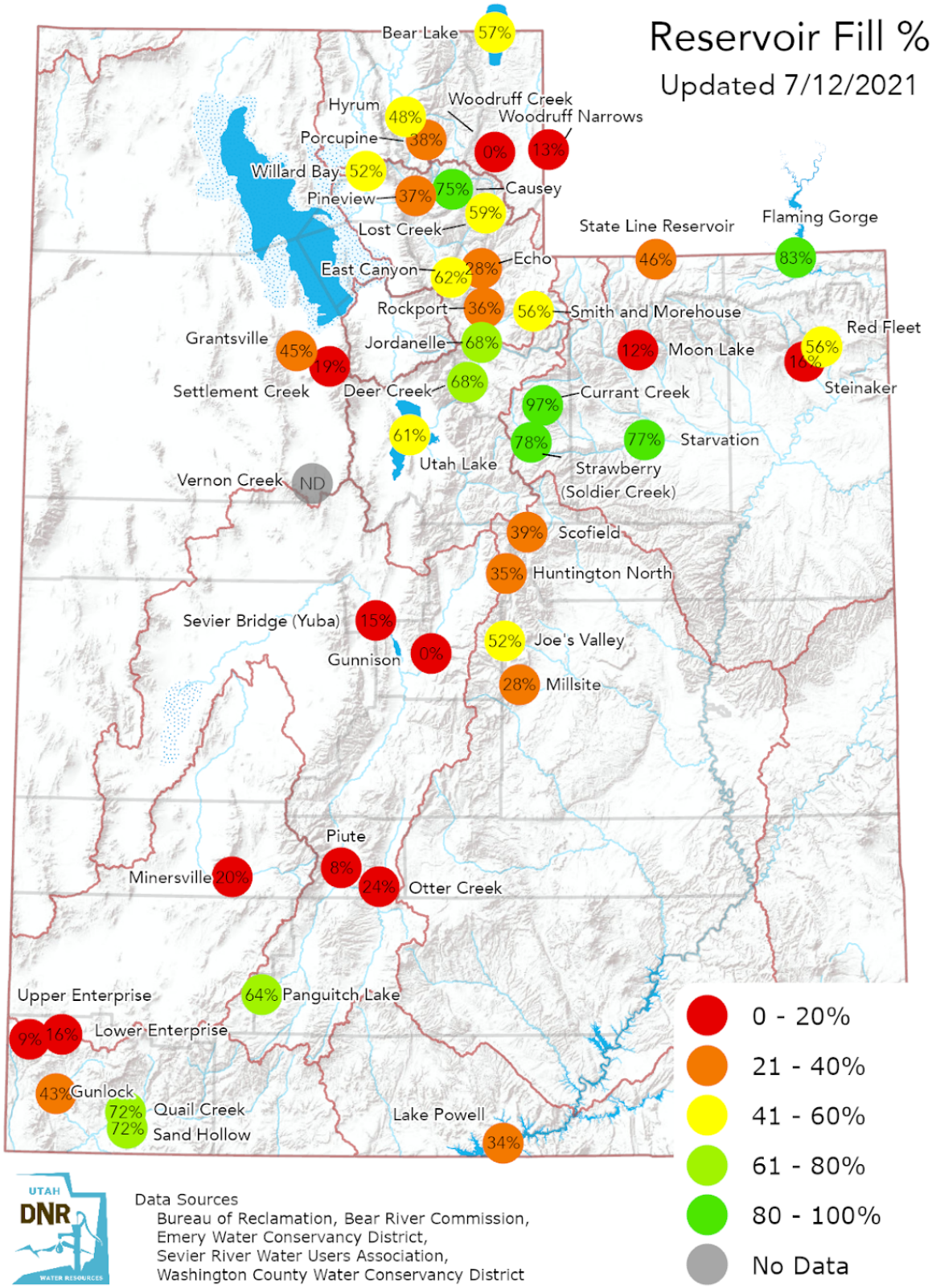
About 95% of Utah's water comes from snowpack. This statewide average ranges from around 75% in the southwest corner to over 95% in the northern part near the Weber Basin headwaters. Different-sized reservoirs are located throughout the state to catch and store runoff. Small reservoirs store about one year's worth of water, while larger reservoirs, like Strawberry or Jordanelle, store several year's worth. Reservoir storage helps to prevent water shortages and is dependent on snowpack and runoff.

- The capacity of major reservoirs statewide dropped another 1% this week compared to last week. Current storage level is 58%.

- Twenty-six of 42 of our largest reservoirs are below 55% of available capacity, which is the same as last week. Our reservoir levels are now below where we ended last year's irrigation year.
- The Great Salt Lake's current elevation has held relatively steady at about 4,191.6 feet, about 2.5 to 3 inches from its historic recorded low level (4191.4 feet) documented in 1963. Ongoing modeling indicates the lake will surpass its historic low this month.



Reservoir levels as of July 12, 2021



UTAH DNR WATER RESOURCES

Data Sources
Bureau of Reclamation, Bear River Commission,
Emery Water Conservancy District,
Sevier River Water Users Association,
Washington County Water Conservancy District

Drought Effects on Priority Distribution of Water Rights in Utah (updated July 13)

While statewide there are many different river systems, the information below highlights water rights priorities, natural flow and direct flow on just four of them. CFS below stands for cubic feet per second.

Middle Bear River – Priorities: Direct Flow (1860 - 1909), Storage (1911), High Rights (1914 - 1989)

Date	*Priority from River*	*Natural Flow*	*% Direct Flow Rights*
July 6, 2019	1989	2,222 cfs	160%
July 6, 2020	1989	2,124 cfs	153%
July 6, 2021	1889	230 cfs	17%

- The water supply on the Logan River, tributary to the Middle Bear, is third lowest on record out of 58 years (1977 and 1992 were lower) according to the CRBFC Water Supply Forecast (Station LGNU1).
- Like last week, only 17% of the direct flow water rights are being met with earliest priority rights being fulfilled from 1860 to 1889.

Upper Provo River – Priorities: Direct Flow (1st Class - 17th Class), Storage

Date	*Priority from River*	*Natural Flow*	*% Direct Flow Rights*
July 9, 2019	16th Class	300 cfs	66%
July 9, 2020	60% 1st Class	91 cfs	35%
July 9, 2021	40% 1st Class	61 cfs	13%

- The water supply on the Provo River at Hailstone is the third lowest on record out of 67 years (1977 and 1961 were lower) according to the CRBFC Water Supply Forecast (Station PVHU1).
- Currently, only 13% (down from 17% last week) of the direct flow water rights are being met, consisting of only 40% of 1st Class rights. 50% of 1st Class rights were met last week.

Upper Duchesne River – Priorities: Direct Flow (1900 - 1964), Storage (1964)

Date	*Priority from River*	*Natural Flow*	*% Direct Flow Rights*
July 8, 2019	Storage	2,773 cfs	250%
July 8, 2020	1936	469 cfs	42%
July 8, 2021	1910	189 cfs	17%

- The water supply on the Duchesne River at Randlett is the second-lowest on record out of 79 years (1977 was lower) according to the CRBFC Water Supply Forecast (Station DURU1).
- Currently, only 17% (down from 25% last week) of the direct flow water rights are being met with the earliest priority rights being fulfilled from 1900-1910. The cfs of the river has decreased from 272 cfs last week to 189 this week.

Upper Sevier River – Priorities: Direct Flow (1st Class – 3rd Class), Storage

Date	*Priority from River*	*Natural Flow*	*% Direct Flow Rights*
July 8, 2019	Storage	478 cfs	118%
July 8, 2020	12% 1st Class	37 cfs	9%
July 8, 2021	30% 1st Class	89 cfs	22%

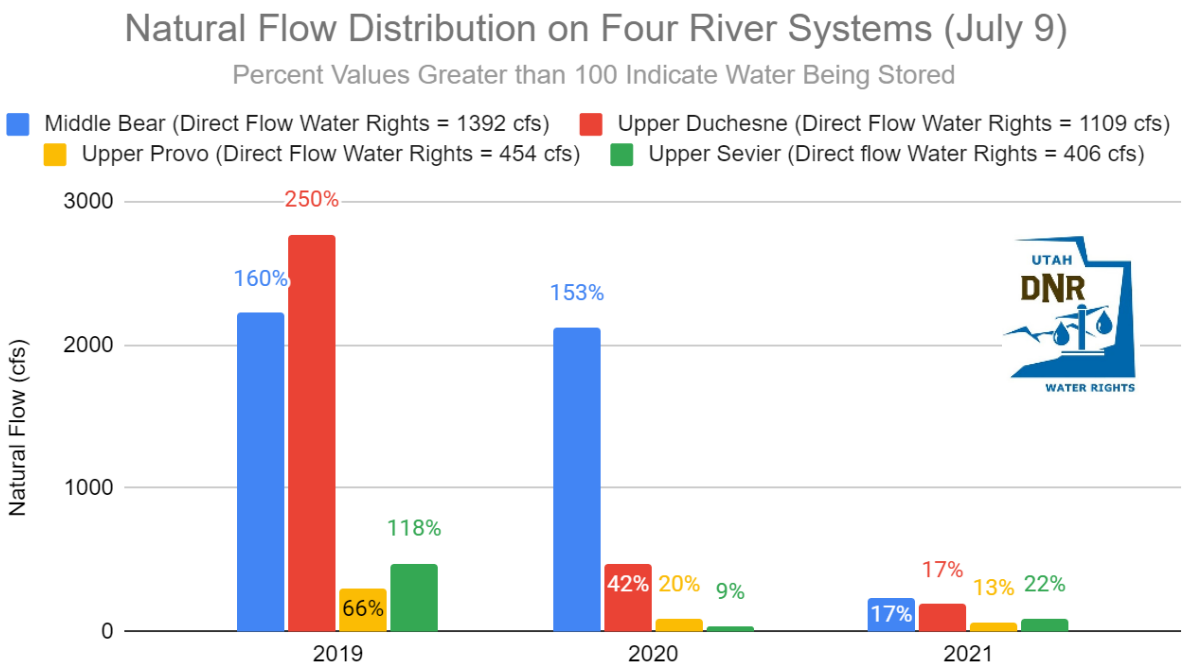
- The water supply on the Sevier River at Piute is the 3rd lowest on record out of 103 years (1957 and 1934 were lower) according to the CRBFC Water Supply Forecast (Station PIUU1).
- Currently, only 22% (up from 19% last week) of the direct flow water rights are being met, consisting of only 30% (25% last week) of 1st Class rights.

Understanding Water Rights and Priority Distribution

Water rights are distributed by the state engineer with priority going to the earliest rights. For example, a water right established in 1889 is entitled to receive its full flow before water rights established in 1890 or later can receive any water. This principle is called the "Prior Appropriation Doctrine" or "first in time, first in right." The earliest water rights in Utah are called "direct flow" rights, meaning they cannot be stored. Storage reservoirs were built later on, so storage rights generally have priority dates later than direct flow rights, although some "high" water rights (direct flow rights with late priority dates) exist.

While some water rights are owned by public water suppliers, others are held by individuals like farmers and ranchers. Priority distribution happens every year, not just during droughts, and occurs irrespective of the type of use. Most water rights are fully or partially curtailed by mid-summer when the natural flow of a stream drops following spring runoff. The term "natural flow" refers to the total supply of a stream, which is generally different from the flow of the stream at any particular point.

Natural flow on complex systems is determined using accounting models developed by the Division of Water Rights. When the natural flow is greater than 100% of the direct flow rights, water can be stored on the system. When the natural flow drops below 100% of the direct flow rights, these rights are reduced according to priority date. Storage, if available, can be released to make up all or part of the deficit. The amount of storage available on each system is a function of the specific projects developed on the system over the last hundred-plus years. This year has seen an early decrease in natural flow because of very little spring runoff. In previous years systems were generally storing water in mid-June, sometimes in considerable amounts, while 2021 is already seeing some of the earliest water rights being curtailed.



Well Replacements

In addition to surface water rights, the state engineer oversees the appropriation of groundwater and construction of groundwater wells. A water right may be approved to allow for the diversion of surface water, groundwater, or a combination of both surface and groundwater. Both surface and groundwater rights are also distributed under the priority system. As groundwater conditions change, well owners may need to replace their well. This may be due to issues of the existing well, or the need to drill deeper. When this happens a water user files either a replacement, or renovate application. In some cases, a change application may need to be filed. This is dependent on the individual status of the user's water right.

- There has been no new replacement or deepening well applications filed in the last week. The total number of replacement and deepening requests remains at 81 statewide.
- As a comparison, there were 113 in 2020 and 102 in 2019. The average annual count during the past five years is 107.